

cate of appointment of Prof. Seward to represent the University at the celebration of the 300th anniversary of the death of Ulisse Aldrovandi to be held at Bologna in June; (2) the address to the Royal Swedish Academy of Sciences, Stockholm, in honour of the commemoration of the bicentenary of the birth of Linnæus to be held at Stockholm in May; (3) the certificate of appointment of Mr. F. Darwin to represent the University at the celebration of the bicentenary of the birth of Linnæus to be held at Stockholm in May; and (4) the certificate of appointment of Dr. Harmer, Mr. W. Bateson, and Mr. A. E. Shipley to represent the University at the seventh International Zoological Congress to be held in Boston in August.

MANCHESTER.—Mr. H. Bateman has been elected to the readership in mathematical physics, endowed by Prof. Arthur Schuster to encourage research in mathematical physics, and to which we recently directed attention (*NATURE*, January 24, vol. xlv, p. 309). Mr. Bateman is a fellow of Trinity College, Cambridge, and was senior wrangler (bracketed), 1905; Smith's prizeman, 1905. He has already published a number of important mathematical contributions. His work in this new post will be followed with interest.

Prof. Ernest Rutherford, F.R.S., is to arrive from Montreal on May 24.

A new departure has been made in the publication of a special prospectus of advanced studies in the faculties of arts and science. A brief account is given of the provision for research in the different departments, as also of the courses of lectures, arranged for the session 1907-8, suitable for post-graduate study. It is hoped in future years to extend the scope of this prospectus so as to give a more extensive record of the resources of the University for advanced study and research.

Mr. C. G. Hewitt has been appointed to the recently founded lectureship in economic zoology.

OXFORD.—The following is the text of the speech delivered by Prof. Love in presenting Prof. A. Graham Bell for the degree of D.Sc. *honoris causa* on May 2:—

Adest Alexander Graham Bell, origine quidem Scotus, diu apud Americanos scientiæ promovendæ dux et auctor probatissimus. Qui vir cum primo Physiologiæ Professor esset, dum surditatis causas et naturam diligentissime expendit, instrumenta quædam arte exquisita effinxit quibus surdi audientium more clara voce loqui docerentur: ita miserorum qui hoc incommodo laborant ægritudines aliqua ex parte relevavit. Idem mox longius progressus latiore apud homines gloriâ adeptus est. Hic ille est qui miraculum illud excogitavit, usu cotidiano iam notissimum, ut ipsa loquentis verba et vivam hominis vocem super montes altissimos et flumina latissima per immensos terrarum tractus et sub ipso Oceano transmittere et, ut aiunt, τῆλε φανεῖν possemus. Virum igitur iure laudamus cum doctrina tum repertis præclarum, qui non solum mortalium commodis naturæ vim inservire coegit sed miseris et mærentibus malorum solamen obtulit.

In a Convocation held in the Sheldonian Theatre on Saturday, May 11, Lord Curzon was admitted and installed as Chancellor of the University. After his installation he conferred the honorary degree of D.C.L. on the Hon. F. R. Moor, Premier of Natal.

An election for the Philip Walker studentship in pathology will be made in October next. The studentship is of the value of 200*l.* a year for three years. Candidates may be of either sex, and need not be members of the University of Oxford. They are asked to send in their applications, with three testimonials, to the Registrar of the University by September 14.

THE *British Medical Journal* announces that Prof. August Bier, of Bonn, has accepted a call to the chair of surgery in the University of Berlin, vacant by the death of Prof. Ernst von Bergmann.

THE first annual conference of the Association of Teachers in Technical Institutions will be held in Leeds on May 23, 24, and 25. On Friday, May 24, the following papers will be read:—(1) Notes of an educational

visit to the United States of America, H. Ade. Clark; (2) the preliminary training of technical students, Barker North; (3) syllabuses and examinations as applied to building subjects, J. Fitzgerald. Excursions, social meetings, and visits to works will form an attractive part of the meeting.

THE Royal College of Surgeons in Ireland has sanctioned two post-graduate courses to be held annually in Dublin hospitals during the summer. The first course will extend from June 10 to July 2, and the second from September 23 to October 15. The object of these courses is to render available the whole of the clinical material in Dublin for the post-graduate student, so that he may see as much as possible during the brief time at his disposal. Ten general hospitals are included in the list of institutions at which the student may work, as well as hospitals devoted to special subjects. The tickets for the courses admit to the ordinary clinics of all the hospitals, as well as to the special work of the course. Further information can be obtained from, and all applications should be addressed to, Prof. Fraser, Royal College of Surgeons, Dublin.

JUDGED in the light of the results of recent examinations of the Punjab University, the study of science does not seem, says the *Civil and Military Gazette*, to be making much headway in the Punjab. Many years ago the Punjab University arranged a faculty of science with the usual matriculation, intermediate, and bachelors degree tests. A few years ago an additional test was established, viz. that for the degree of master. In 1907, whilst 3546 went up for the matriculation examination in the faculty of arts, only fifty-eight appeared in the similar examination in the faculty of science. Thirty-seven went up for the intermediate examination of the science faculty against 674 who appeared in the same examination in the faculty of arts; whilst the number of candidates in the B.A. examination was 341, only thirteen went up for the same examination in the faculty of science. This comparative neglect of scientific studies is much to be regretted, especially in India, where the object of university education is to effect a combination of the highest results of Western culture and science with the learning of the East.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 7.—"Electric Furnace Reactions under High Gaseous Pressures." By R. S. Hutton and J. E. Pataval.

Two steel chambers of 20 litres and 2 litres capacity respectively provided with valves, windows, and insulated electrode holders have been constructed and employed at working pressures up to 200 atmospheres. Inside these pressure vessels any desired arrangement for arc or resistance heating is mounted.

Apart from the influence of pressure, which was the primary object of the investigation, special attention was paid to the effect of the nature of the gaseous atmosphere upon the reactions.

Some measurements were made of the electrical constants of carbon and metal arcs in different gases at high pressures, and the rate of oxidation of heated metals was also considered. With a charge of 10 kilos. of lime and carbon the preparation of calcium carbide was studied in atmospheres of carbon monoxide, coal gas, and hydrogen under reduced and high pressures. Contrary to expectation, no unfavourable influence of carbon monoxide upon the yield was noticeable, the back reaction being limited to the surface.

Silica fused under pressure exhibits a marked decrease in vaporisation, but no appreciable increase in fluidity and transparency. The production of carborundum under pressure is much limited, owing to this decreased volatility of silica.

The authors, as a result of a long, detailed, investigation of the reduction of alumina, conclude that this oxide is reducible by carbon at all temperatures above the melting point, but the metal is set free in the form of vapour, and

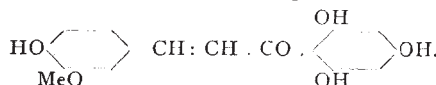
can only be collected if it be protected from reaction with carbon monoxide.

Having overcome the difficulties of maintaining an electric arc in highly compressed air, it is shown that the production of oxides of nitrogen exhibits an increased efficiency attributable to pressure.

Linnean Society, April 18.—Dr. A. Smith Woodward, F.R.S., vice-president, in the chair.—The oecological functions of stolons and cleistogamous flowers: J. C. **Shenstone**. The author pointed out the advantages to the plants by the colony-forming habit, such as its more certain pollination and greater power of holding its own against competitors, instancing as examples *Bellis perennis*, *Thymus Serpyllum*, and *Mercurialis perennis*. Further examples were dwelt upon in the cases of *Urtica dioica*, *Adonis Moschatellina*, and the violets, *Viola odorata* and *V. canina*, where both stolons and cleistogamous flowers cooperate in keeping the colonies compact.—The conservation of existing species by constitutional or physiological variation giving greater power of adaptation without perceptible change of structure: A. O. **Walker**. The author referred to a supposed case of two healthy men going to an unhealthy climate: one, proving immune to the local diseases, might conceivably transmit that quality to his children; the other, falling a victim to the climate, would leave no descendants. As instances he brought forward the case of *Crepis taraxacifolia*, long known in Wales as a rarity, which in 1896 onwards became extremely abundant at Colwyn Bay. He considered that this might be accounted for by a different variety, morphologically identical, yet physiologically distinct, having been introduced, which, by its ability to adapt itself to its surroundings, had rapidly extended its area of growth. Another case was of *Cardamine pratensis*, usually stated to grow in moist meadows, which is accurate as regards North Wales, but in Kent its favourite habitat is coppice woods, the second year after cutting the undergrowth. It is frequent on dry banks, on masses of roots of trees or shrubs, probably as xerophilous a station as could be imagined.—An aberrant Coccid: Hugh **Scott**. The species of Coccid, or scale-insect, described was found at the northern border of the Algerian Sahara by Mr. J. J. Lister.—Some results of inoculation of leguminous plants: Prof. W. B. **Bottomley**. In May, 1906, experiments were begun; tares, *Vicia sativa*, were chosen, and inoculated seeds set in sterilised sand, to which the requisite potash and phosphate salts had been added. A second set of pots were prepared with untreated seed, but besides the potash and phosphate, nitrate of soda proportionate to 2 cwt. per acre was added. In the last week of July the results were tested and found to be:—tares, with nitrate of soda, yielded 1.92 per cent. nitrogen; tares, inoculated, yielded 3.07 per cent. nitrogen, showing that the latter contained more than 50 per cent. more nitrogen than those grown with nitrate of soda, the food value being correspondingly increased. Specimens of field crops were obtained from Scotland to check these results, in September, and the three experimental plots proved:—Section A, no nitrogenous manure, 3.41 per cent. nitrogen; Section B, nitrate of soda, 3.75 per cent. nitrogen; Section C, inoculated, 4.04 per cent. nitrogen. Here the differences are less, due to the fact that farm soil invariably contained a certain number of the nitrogenous bacteria, which accounted for these results. Section B showed a yield of 9 tons 8 cwt. per acre, and Section C (inoculated) showed 12 tons 5 cwt. of fodder.

Chemical Society, May 2.—Sir William Ramsay, K.C.B., F.R.S., president, in the chair.—The chemical action of the radium emanation, part i., action on distilled water: Sir W. **Ramsay**. The action of the emanation alone on water decomposes it into explosive gas, mixed with excess of hydrogen; it has been shown that the emanation, when mixed with explosive gas, causes re-combination, and the rate at which the decomposition of water takes place has been measured. The reason of the excess of hydrogen has not yet been elucidated.—Freezing-point curves of the menthyl mandelates: A. **Findlay** and Miss E. M. **Hickmans**. From a study of the freezing-point curves for mixtures of *l*-menthyl *l*-mandelate and *l*-menthyl *d*-mandelate, it is found that *l*-menthyl *r*-mandelate exists

as a definite, partially racemic compound having a stable melting point of 83°.7. It was also pointed out that other freezing-point curves indicate the existence of true racemates in the liquid state.—The constitution of homo-eriodictyol. A crystalline substance from eriodictyon leaves: F. B. **Power** and F. **Tutin**. Homo-eriodictyol, $C_{16}H_{14}O_6$, is isomeric with hesperitin, and similar to the latter in many of its properties, contains one methoxyl group, yields a tetra-acetyl derivative, and is hydrolysed by aqueous potassium hydroxide to phloroglucinol and ferulic acid. From these results it is concluded that homo-eriodictyol must possess the following constitution,



Eriodictyol, $C_{16}H_{14}O_6$ (m.p. 267°), a crystalline substance, which was also isolated by the authors from eriodictyon leaves, contains no methoxyl group. Homo-eriodictyol is probably a methyl ether of eriodictyol.—The relation between valency and heats of combustion. Preliminary note: G. **Le Bas**. The heat of combustion of a substance may be regarded as made up of (a) an absorption of heat due to the dissociation or decomposition, and (b) an evolution of heat due to the combination of the isolated atoms with oxygen. A study of molecular heats of combustion reveals the following law, which appears to be generally valid. The heat of combustion of an organic compound is equal to the heats of combustion of its possible dissociation products. The factor (a) is negligibly small as compared with (b). The heats of combustion of organic compounds in most cases are found to be the same as those of saturated and unsaturated hydrocarbons and hydrogen, or of mixtures of these. Similarly the factor (a) is negligibly small as compared with (b) in the case of the saturated and unsaturated hydrocarbons, and therefore their heats of combustion are sensibly those of their isolated atoms, plus an excess for the latter, owing to unsaturation. These relations lead to a second law which applies to all the hydrocarbons. The molecular heats of combustion of the hydrocarbons are proportional to their valency numbers.—The velocity of hydrolysis of aliphatic amides by alkali: J. C. **Crocker** and F. H. **Lowe**. The reactions of the aliphatic amides with sodium hydroxide are shown to follow the bimolecular relation

$$K = \frac{l}{a} \left[\frac{l}{c} - \frac{l}{c^0} \right],$$

where a is the degree of dissociation of the alkali.—The addition of iodine to acetylenic acids: T. C. **James** and J. J. **Sudborough**.—The chemical changes induced in gases submitted to the action of ultra-violet light: D. L. **Chapman**, S. **Chadwick**, and J. E. **Ramsbottom**. Dry carbon dioxide is decomposed by ultra-violet light. The rate of contraction of a mixture of carbon monoxide and oxygen is practically independent of the degree of desiccation of the gases, due to the fact that, though the presence of moisture causes the rate of formation of carbon dioxide to rise, it results in an equivalent reduction in the yield of ozone.—Studies of the perhalogen salts, part i.: C. K. **Tinkler**.—The interaction of cyanodihydrocarvone, amyl nitrite, and sodium ethoxide: A. **Lapworth** and E. **Wechsler**.—Contributions to the chemistry of oxygen compounds, ii., the compounds of cineol, diphenylsulphoxide, nitroso-derivatives, and the carbamides with acids and salts: R. H. **Pickard** and J. **Kenyon**.

DUBLIN.

Royal Dublin Society, April 23.—Prof. J. A. McClelland in the chair.—Pleochroic halos: Prof. J. **Joly**. The paper is descriptive of more extended observations on the subject. Both *Androdierite* and *biotite* the halos attain a like maximum radius, and appear only formed around strongly radio-active enclosures. Their origin appears to be referable to some action of the α rays. In the radial dimension it is found to agree with Rutherford's measurements of the effective range of these rays in matter of similar density.—The quantitative spectra of barium, strontium, calcium, magnesium, potassium, and sodium: Dr. James H. **Pofook** and A. G. G. **Leonard**. The

authors showed photographs of the spark spectra of solutions of these elements, using gold electrodes in the manner described in a previous paper, and the progressive disappearance of the lines on continued dilution was noted, the lines surviving with 1 per cent., 0.1 per cent., 0.01 per cent., and 0.001 per cent. of the element being tabulated. The paper is part of a scheme of work designed to facilitate the use of the spectroscope in its application to ordinary analytical work. The residuary or most persistent lines of an element are not necessarily the most intense as ordinarily tabulated, and when only a small quantity of an element is present it is only those residuary lines that show, hence the importance of their determination.

PARIS.

Academy of Sciences, May 6.—M. A. Chauveau in the chair.—Study of the variation in the solar radiation: H. Deslandres. After a discussion of the existing state of knowledge in this subject, the author concludes that the continuous study of the distribution of brightness over the surface of the sun should be organised with great care; if it does not furnish the intensity of the variation of the radiation, it shows the existence of this variation, or at least the existence of important disturbances, in a certain and rapid manner.—An extension of the Friedel and Craft reaction: A. Haller and A. Guyot. A description of the use of aluminium chloride in the condensation of secondary amines and numerous organic substances. Among the reactions studied are indigotin and dimethylaniline, benzil and dimethylaniline, orthodibenzoylbenzene, ethylphenylglyoxylate, benzophenone, isatin, all with the same base, and other condensations with diethylaniline.—The zoological position, the affinities and development of Peneides of the genus Funchalia: E. L. Bouvier.—The direct hydrogenation of the fatty isocyanides: Paul Sabatier and A. Mailhe. In the presence of reduced nickel at a temperature of 160° C. to 180° C., the primary reduction product of the carbaminc R.N:C is the amine R.NH.CH₃. Some secondary amines are obtained as bye-products.—Study of the relations between the solar activity and the magnetic and electrical variations recorded at Tortosa, Spain: MM. Cirera and Balcells. A discussion of the records for the first three months of the present year.—Differential equations of the second and the first degree the general integral of which is with fixed critical points: Bertrand Gambier.—Certain congruences of lines: Ch. Michel.—An automatic damping arrangement for the rolling of ships: V. Crémieu.—Plurivalent atoms: Henri Pollat. By admitting the hypothesis that a plurivalent atom consists of a collection of as many monovalent atoms as there are units of valency, numerous facts in electrolysis can be explained.—A speaking condenser: Timoléon Argyropoulos.—Wireless telegraphy: L. Torres. A discussion and criticism from the point of view of priority of a recent note on the same subject by M. Gabet.—The absolute atomic weight of bromine: Gustavus D. Hinrichs. A re-calculation of the analytical determinations of Baxter, from which the value 80.00 is obtained instead of the value 79.953 deduced by Baxter.—The application of the method of limiting densities to the permanent gases at 0° C.; the gas constant for perfect gases: Philippe A. Guye. From a critical discussion of the experimental data, the author concludes that the gas constant is not strictly constant, but increases with the critical temperature of the gas, and varies 1/2800 between hydrogen and nitric oxide. This variation is regular, and can be represented by the formula $R = 22.410(1 + 10^{-8}T^2)$.—Inactive dihalic acid: E. Jungfleisch and H. Godchot.—Decahydronaphthylketone- α and decahydronaphthylamine- α : Henri Leroux.—The origin of serpentine and the crystallophyllian series of Aveyron and Gard: Jules Bergeron.—The culture of the forage Leguminosæ: J. Dumont and Ch. Dupont.—Sucrase in musts of apples and ciders: G. Warcollier.—The nuclear evolution of the schizote of *Aggregata Eberthi*: L. Léger and O. Duboscq.—The origin of the zonal anodine blastoderms: Jan Tur.—Researches on the labic activity of the gastric mucus and on the supposed specific labogenic action of milk: Maurice Dehon.—The re-establishment of the pulsations of the heart in fibrillation: H. Kronecker.—

The law of the hæmolytic effect of the Becquerel rays: C. J. Salomonsen and G. Dreyer.—The experimental reproduction of granular conjunctivitis in the ape, *Macacus sinicus*: C. Nicolle and M. Cuenod.—The organisation and systematic position of the genus *Sezannella*: René Viguier.

DIARY OF SOCIETIES.

THURSDAY, MAY 16.

ROYAL INSTITUTION, at 3.—Spectroscopic Phenomena in Stars, (2) Motion: H. F. Newall, F.R.S.

CHEMICAL SOCIETY, at 8.30.—The Relation Between the Crystalline form and the Chemical Constitution of Simple Inorganic Substances: W. Barlow and W. J. Pope.—Experimental Investigation into the Process of Dyeing: J. Hübler.—Some Derivatives of β -Pyranol allied to certain Derivatives of Benzilein and Hæmatein, Preliminary Communication: W. H. Perkin, Jun., and R. Robinson.—Mixed Semi-ortho-Oxalic Compounds: G. D. Lander.—The Mechanism of Bromination of Acylamino-compounds, Preliminary Notice: J. B. Cohen.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Present State of Direct Current Design as Influenced by Interpoles: F. Handley Page and Fielder J. Hiss.

FRIDAY, MAY 17.

ROYAL INSTITUTION, at 9.—Seiches in the Lakes of Scotland: Prof. George Chrystal.

THURSDAY, MAY 23.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: On the Two Modes of Condensation of Water Vapour on Glass Surfaces, and their Analogy with James Thomson's Curve of Transition from Gas to Liquid: Prof. F. T. Trouton, F.R.S.—The Relation of Thallium to the Alkali Metals: a Study of Thallium Sulphate and Selenate: Dr. A. E. H. Tutton, F.R.S.—On the Frictional Resistances to the Flow of Air through a Pipe: J. H. Grindley and A. H. Gibson.—Chemical Reaction between Salts in the Solid State: Dr. E. P. Perman.—Studies on Enzyme Action, IX., The Nature of Enzymes: Prof. H. E. Armstrong, F.R.S., and Dr. E. F. Armstrong.—Studies on Enzyme Action. The Enzymes of Yeast: Amygdalase: R. J. Caldwell and S. L. Courtauld.

ROYAL INSTITUTION, at 3.—Chemical Progress—Works of Berthelot, Mendeleeff, and Moissan: Sir James Dewar, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Present State of Direct Current Design as Influenced by Interpoles: F. Handley Page and Fielder J. Hiss.—Hot Wire Watt Meters and Oscillographs: J. T. Irwin.

FRIDAY, MAY 24.

ROYAL INSTITUTION, at 9.—Recent Contributions to Electric Wave Telegraphy: Prof. J. A. Fleming, F.R.S.

LINNEAN SOCIETY, at 8.—Anniversary Meeting.

PHYSICAL SOCIETY, at 5.

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